

# EPA's Post-ANPR "Action Plan" for the Bay Delta Estuary

16 May 2011

## Schedule of Milestones

**18 May 2011:** Tim sends Team 3<sup>rd</sup> internal draft Action Plan

**24 May 2011:** Team sends comments to Tim on 3<sup>rd</sup> internal draft Action Plan

**27 May 2011:** Tim sends Team 4<sup>th</sup> internal draft Action Plan

**01 June 2011:** Karen sends draft Action Plan to Alexis, R9 managers and scientists, HQ

**01 July 2011:** Team sends revised draft Action Plan to Water Boards and other federal agencies

**July/August 2011:** Team prepares "public draft" Action Plan that incorporates comments received, and discussions with stakeholders referenced above.

**September 2011:** Team releases "public draft" Action Plan

### Potential venues TBD

\* SFEP State of the Estuary conference 9/20-21

<http://www.sfestuary.org/soe2011/>

\* Delta Stewardship Council

\* CFBF annual conference in Sparks, NV

<http://www.cfbf.com/programs/events.cfm>

\* Salmonid Restoration Federation

<http://www.calsalmon.org/>

**October/November 2011:** Team finalizes Action Plan.

**December 2011:** Team releases Final Action Plan (and blasts off)!

Ammonia

**1. EPA will support the efforts of the Central Valley Water Board to restrict loads of total ammonia nitrogen (ammonia) discharged from the Sacramento Regional Wastewater Treatment Plant (SRWTP) as part of the new NPDES permit that will be issued to the Sacramento Regional County Sanitation District (SRCSD)<sup>1</sup>.**

- a. Write a letter. Support regional and state boards in writing when the draft order is re-issued in response to the SRCSD petition to appeal the recent NPDES order.
- b. Testify at State Board hearing when they have one regarding SRCSD's appeal of the NPDES permit.

**2. EPA will engage with the Central Valley Water Board and SRCSD<sup>2</sup> to seek *interim actions* for curbing ammonia discharges (e.g., double-processing wastewater) while work is done to upgrade infrastructure at the SRWTP.**

Tertiary treatment and denitrification of the wastewater by SRCSD may be sufficient for resolving the toxicity problem in the Bay/Delta, however, it will take years to build new infrastructure for this purpose, and interim actions should be devised now and implemented to reduce loads of ammonia to acceptable levels (e.g, double-processing wastewater to decrease ammonia to the lowest levels afforded by existing infrastructure).

\* Erin/Bruce follow-up with Dugdale, Foe, and Sablad to discuss potential aspects of an interim action, e.g., double-processing wastewater, and the “flow window” during late May/early June as a function of a given water year.

- SRCSD is conducting a study of interim solutions for reducing ammonia loads from effluent prior to construction of improved treatment facilities. EPA should comment on that study when it is released.
- Foe, Taberski, and Fong do not have details regarding any action SRCSD took at the WWTP with ‘double processing’ effluent during certain windows of time in 2010. It is all word of mouth at this point. And it would not be part of the above mentioned study because that study is a requirement of the December 2010 NPDES permit issued by the Central Valley Board, later adopted by the State Board.
- SRCSD confirmed that the method for managing solids in their within plant retention basins was adjusted in 2010 to see if there were any ammonia reductions achieved without substantially altering other important treatment processes. The result was a 10% ammonia reduction. SRCSD is checking to see if there are written documents describing the adjustments and will get back to us. Phone conversation with Linda Dorn, Senior Environmental Program Manager, SRCSD, May 15, 2011.
- Foe has monitoring data that show ammonia loads were down in 2010 from 2009 levels (Foe provided data) but that he is not confident it is a “real” reduction given the ‘noise’ or variability in the data set or a direct result of 2010 SRCSD

<sup>1</sup> The term “support” means: leveraging grant programs, providing supportive testimony, filling data gaps, expending “political” capital on outreach to key sectors.

<sup>2</sup> <http://srcsd.com/>

process adjustments.

- Taberski and Foe mentioned studies that are continuing this year but are not measuring significant ammonia concentrations due to high flow. Email from Karen Taberski May 16, 2011 describes the studies.
  - The 2010 Suisun study was just a SWAMP R2 study where we contracted with RTC. We are currently writing up a paper for publication based on that work.
  - The study in 2011 and 2012 includes water contractors, BACWAA and Central San with an expanded scope including measurements of nutrient uptake and primary production, pesticide measurements, toxicity tests and, if we can work out a valid protocol, TIEs. Karen

**3. EPA will engage with the Water Boards (Central Valley, San Francisco Bay) to list Suisun Bay as impaired for ammonia under CWA §303(d), and establish a site-specific water quality objective (standard) for this contaminant in Suisun Bay.**

\* Erin follow-up with Foe and Board #2

- Taberski (sr. scientist at Board 2) indicated that she feels there is enough information to show that ammonium levels are impairing beneficial uses in Suisun Bay and has worked with Board 2 at listing other waters as impaired with less evidence.
- However, Board 2 did not want to list it because it is not violating a numeric water quality criteria/objective. Board 2 uncomfortable listing based on violation of narrative toxicity criteria.
- Foe agreed that there is probably sufficient information for listing Suisun Bay as impaired due to ammonia.
- Fong noted Boards are different. Board 5 is comfortable with listing impairments due to violation of narrative tox criteria.
- Sac Regional NPDES permit requires tertiary treatment and denitrification based on the premise that there is beneficial use impairment in Suisun Bay.

**4. Engage with the Central Valley and San Francisco Bay Water Boards to develop site-specific ammonia criteria for the Delta.**

- Agreement that numeric criteria would provide parameters to make impairment decisions more straight-forward.
- Site-specific criteria for Estuary would be difficult for various reasons:
  - Dugdale ammonium-mediated nitrate uptake inhibition threshold for diatoms is 100 times lower than EPA's draft 2009 aquatic life criteria.
  - Diatom production seems to be inhibited in Suisun but we don't know about the Delta.
  - South Bay shows trend toward eutrophication with phytoplankton populations on the rise and growing despite having ammonium levels above the 0.05 mg/L Dugdale inhibition threshold. Same is true for San

Joaquin River (Dugdale threshold exceeded by a factor of five and don't see inhibition of nitrate uptake by diatoms). How can we explain the difference and how would we set criteria amidst the varying results?

- Regional Board 5 is concerned that EPA update to aquatic life criteria would not be protective enough of Suisun, maybe not of Delta.
- Potential for adopting criteria for Suisun, need more information for Delta.
- Regional Board 2 noted that the Combined Contra Costa Sanitation District outfalls in Suisun are equivalent to the Sac Regional input once it reaches Suisun. Site specific criteria and 303 (d) listing (category 4) would assist them in adjusting NPDES permits at times of renewal.

**5. Engage Water Boards to establish “estuarine NNE” for site-specific ammonia criteria for the Delta.**

\* Erin and Karen meet with TF

- Need to talk with Naomi Feger too.
- NNE does not extend beyond Suisun Bay, not into the Delta.
- Question of site-specific ammonia criteria still very relevant for Delta.

**6. Control “other sources” of ammonia including the reclamation and re-use of water at the municipal level<sup>3</sup>.**

\* Erin follow-up with Foe and Board #2.

- Regional Board 5 and 2 didn't have much information on this. They think SRCSD has re-use of water on its properties but not elsewhere.
- Helpful for EPA to support re-use. Find other uses for the water, keep it out of the river. Even if it only happens in the summer, that would have potential to improve water quality dramatically. Discharges could then happen when more dilution capacity is in the system.

**7. EPA will finalize the *national ammonia criteria*.**

\* Karen will check with OST on status

- Anticipate federal register notice regarding final criteria in summer 2011. OST has copy ready to go, need AA signature, planning for publication at end of May.
- Criteria have changed. Instead of a criteria number w/ and w/o mussels present, there will be one acute criterion number and one chronic criterion number.
- Update provided by Lisa Huff, Toxicologist in the Ecological Risk Assessment Branch, Health and Ecological Criteria Division of OST in a May 9, 2011 email.

**8. EPA will support reuse of treated sewage in landscaping and other applications as a way to reduce ammonia loading to delta waterways, especially in the near term [BH].**

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<sup>3</sup> Discussed as a potential alternative for cities and utilities building new water intakes or increasing exports to So. CA.

EPA will work to anticipate and integrate NPDES requirements with all future changes in delta and river physical conditions, intentional or catastrophic, to ensure that toxic and ecosystem effects of ammonia discharge are minimized [BH].

### Selenium

**1. EPA Region 9 will promulgate site-specific numeric criteria to protect aquatic life and aquatic-dependent wildlife species (including T & E species) from selenium in the Bay-Delta.**

This action, which is the first phase<sup>4</sup> of revision of selenium criteria by EPA for California as a whole, will be completed in 2011. It addresses the long-term (chronic) exposure of wildlife to selenium in the **San Francisco Bay and Delta**, using an ecosystem-based model developed by the USGS to account for food web processes, hydrology (flowing versus and site-specific conditions (e.g., flowing and standing water)<sup>5</sup>. The criteria, **which will be protective of aquatic life and aquatic dependent wildlife**, are expected to significantly lower the allowable concentrations of selenium in water and species' tissue. *[Tim: do not cite HQ at this point.]*

The existing TMDLs for agricultural drainage in the San Joaquin Valley could be affected by requirements resulting from the site-specific Delta criteria. (This presumes that selenium loading might continue at levels meeting existing standards (5 ppb) and also that the area currently discharging selenium does not reach zero discharge.)

EPA also has a national effort underway to establish guidance criteria for selenium to protect aquatic life in freshwater under CWA §304(a), using a methodology consistent with the USGS method. This effort will tailor the numeric criteria to different conditions in flowing and standing waters; it is not intended to account for the effects of selenium on T&E species.

**2. EPA will support the work of the San Francisco Bay Water Board to complete a TMDL for selenium in the North San Francisco Bay, Suisun Marsh and the West Delta ("North San Francisco Bay TMDL").**

An important component of EPA's support will continue to be development and promulgation of protective wildlife criteria, using the USGS ecosystem-based methodology. **It is expected that the Regional Board will use targets consistent with the site-specific selenium criteria currently under development by EPA for this TMDL.**

The San Francisco Regional Water Board recently issued a report on the status of technical studies and assessments relating to the required 'technical' elements of a

<sup>4</sup> Subsequent work will result in the promulgation of criteria statewide.

<sup>5</sup> Theresa Presser & Samuel N. Luoma, *A Methodology for Ecosystem-Scale Modeling of Selenium*, 6 INTEGRATED ENVTL. ASSESSMENT & MGMT. 685, 685-710 (2010) <http://onlinelibrary.wiley.com/doi/10.1002/ieam.101/abstract>. This work is pursuant to two agreements reached following an ESA consultation and Biological Opinion on the California Toxics Rule; U.S. EPA agreed to develop and promulgate as part of the California Toxics Rule aquatic life criteria for listed species.

TMDL, including numeric targets, selenium loads coming from various sources, and the linkage of these factors to species exposure.<sup>6</sup> Freshwater flows from rivers entering the Delta strongly influence water quality in this northern area of the Bay and western Delta. Thus, effective implementation of the selenium TMDLs in the San Joaquin basin are expected to benefit the North Bay.

*\* CY/DF/ WTR5: What can we say about the refinery permits and dilution credits?*

3. **EPA will work with the Central Valley Water Board and other agencies overseeing implementation and monitoring for the Grasslands Bypass Project:**
  - a. **to improve the effectiveness of monitoring and reporting for the Project**
  - b. **and to enlist the technical expertise from this Project in designing a broader monitoring plan for selenium.**
  - c.

With the recent State Board approval of a time extension for implementing the Project, the Regional Water Board [will soon issue] revised Waste Discharge Requirements that include monitoring of project compliance. Monitoring associated with the Project has covered chemical water quality, biological effects, toxicity, and sediments. To get a fuller picture of selenium risk to biota, and to re-examine protective targets for selenium in the San Joaquin River and tributaries using the USGS ecosystem-based model, other information is needed. The Fish and Wildlife Service has provided evidence that juvenile salmon may be at risk under the current conditions.<sup>7</sup> With the anticipated re-introduction of salmon above the Merced through the San Joaquin River Restoration Program, this issue is important.

4. **EPA will work with scientists and representatives from other federal and State agencies to identify and develop data relevant to species exposure and add them to decision-making models (e.g., the *Presser-Luoma* model).**

*\* To “populate” the model with data that will improve its accuracy in both the Bay-Delta and the San Joaquin Valley, Carolyn will consider seeking funds or a statement of need in a science section to be added to the Action Plan.*

This action commits EPA to developing a work plan, in collaboration with experts drawn from IEP agencies [?] and arranging funding to for data and analysis to support revised selenium criteria upstream of the Bay-Delta. EPA expects to use an ecosystem-based foodweb model to assess risk, taking into account sensitivity of listed species.

### **Pesticides**

**Finding:** The waters within the geographical area encompassed by EPA Region 9 are affected by more pesticide-related impairments (per CWA §303(d)) than any other EPA

<sup>6</sup> San Francisco Bay Region, Water Quality Control Board, “Total Maximum Daily Load Selenium in North San Francisco Bay, Preliminary Project Report,” January 2011 (prepared by Barbara Baginska).

<sup>7</sup> The lower San Joaquin River between the confluence with the Merced and the Delta has been removed from listing as ‘impaired’ for selenium, as the chronic objective of 5 ppb selenium is met. This section of the river has fall run salmonids.

Region<sup>8</sup>.

- 1. EPA will coordinate internally across its programs (i.e., Office of Water, and Office of Pesticide Programs) to incorporate an *aquatic life benchmark* into the *common effects methodology* for evaluating the environmental risks of pesticides, and to advance the *harmonization* of the CWA and the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA).**

\* EF & KS meet with CED

Initial discussion with CED Patti Tenbrook

- OW not very engaged, for example, in the aquatic pesticides PGP NPDES permit. They did not support Patti and Debra when they suggested language to improve the permit.
- OPP engaged OW folks that work on biosolids but have been otherwise unsuccessful at getting the right OW people to the table.
- Need: org chart of OW, ask others (Donna Downing, Karen Schwinn) who might be the right people at HQ/OW to talk to about this.
- Need to communicate that toxicity to aquatic life from current use pesticides is happening. OPP does not appear to be convinced. OW does not carry the message.
- Why doesn't OPP use aquatic life criteria as their benchmarks for ecological risk from registering pesticides?
  - PT says it is because registration is done for new chemicals; no tox testing; no real-life, real-time experiments in the environment with observed tox to aquatic life.
  - There aren't any aquatic life criteria for new chemicals.
- Methods important. Registrants are not required to use test organisms that are most sensitive to their chemical.
- Potential action/message – require registrants to do toxicity testing consistent with WET methods used for criteria derivation.
- Change unit expression to toxicity units instead of pounds of chemical/active ingredient used.
- Common effects methodology
  - PT thinks methods are improving
  - Developing best way to do risk assessment with data we have
  - Improving on ucd methods used for CV Board's criteria
  - Also trying to predict toxicity based on molecular structure when no info exists.

- 2. EPA will support the State Board's implementation of its "toxicity policy" to addresses the additive effects of multiple contaminants, and to convert narrative criteria for pesticides in waterways into numeric criteria<sup>9</sup>.**

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<sup>8</sup> Coastkeeper?

<sup>9</sup> [http://www.swrcb.ca.gov/water\\_issues/programs/state\\_implementation\\_policy/docs/not\\_wrkshp\\_tox\\_policy.pdf](http://www.swrcb.ca.gov/water_issues/programs/state_implementation_policy/docs/not_wrkshp_tox_policy.pdf)

3. **EPA will support the work of the Central Valley Water Board to amend the Central Valley Pesticide TMDL and Basin Plan Amendment<sup>10</sup> to establish water quality criteria and Total Maximum Daily Loads (TMDLs) for pesticides that are impairing aquatic life in the Bay/Delta, especially pyrethroids.**
4. **EPA will support the work of the California Department of Pesticide Regulation (DPR) to: (a) improve the methods for applying pesticides; (b) write new instructions for product labels that detail the improved application methods; and (c) formulate water quality regulations for urban pesticide use.**  
 \* EF will follow-up with DPR to ask how we can help
5. **EPA will assist DPR in their collaboration with industry, municipalities, and consumers to significantly reduce the amount of pesticides purchased and applied across California.** Consider launching an “Energy Star” style program to honor enlightened applicators and application methods, certain products, and integrated pest management (IPM) programs<sup>11</sup>.
6. **EPA will collaborate with the State Board, municipalities, and non-governmental organizations to utilize existing models (or develop new ones, if necessary) to characterize the the fate and transport of pesticides from urban/suburban landscapes into the Bay/Delta.** \*  
 EF will look into what different models do
7. **EPA and the State Board will determine the extent to which unpermitted stormwater outfalls are contributing contaminants to the Bay Delta Estuary, and their degree of adverse effects on the fishable, swimmable characteristics of the surface waters. If the degree of adverse effects is substantial, EPA will exercise its *residual designation authority* to bring these point sources into compliance with the NPDES program<sup>12</sup>.**  
 \* Erin and Karen will meet with Smith & Denton; Erin maps permits; where no permits exist, use model to assess potential problem...  
 \* Tim will cross-walk with RMP section...

### Contaminants of Emerging Concern

1. **EPA will support the work of the California Department of Toxic Substances Control (DTSC) to advance the implementation of the Green Chemistry Initiative<sup>13</sup>.**

<sup>10</sup> [http://www.swrcb.ca.gov/rwqcb5/water\\_issues/tmdl/central\\_valley\\_projects/central\\_valley\\_pesticides/index.shtml](http://www.swrcb.ca.gov/rwqcb5/water_issues/tmdl/central_valley_projects/central_valley_pesticides/index.shtml)

<sup>11</sup> <http://www.epa.gov/opp00001/factsheets/ipm.htm>

<sup>12</sup> ANPR: *Water Quality Challenges in the San Francisco Bay/Sacramento-San Joaquin Delta Estuary* (FEB 2011), pp. 14, 45, 47. [http://www.epa.gov/region9/water/watershed/sfbay-delta/pdf/BayDeltaANPR-fr\\_unabridged.pdf](http://www.epa.gov/region9/water/watershed/sfbay-delta/pdf/BayDeltaANPR-fr_unabridged.pdf)  
*EPA and Maine Take Action to Reduce Stormwater Pollution in South Portland Ecosystem* (2008)  
<http://yosemite.epa.gov/opa/admpress.nsf/0/F1D98AA01E51472A8525751600541E79>

<sup>13</sup> <http://www.dtsc.ca.gov/PollutionPrevention/GreenChemistryInitiative/index.cfm>  
<http://coeh.berkeley.edu/docs/news/2009-bcgc-acsc.pdf>



This will include EPA's efforts to harmonize the federal Toxic Substances Control Act (TSCA) with non-regulatory pollution prevention (P2) programs and the State's Green Chemistry Initiative.

\* Tim will follow-up with Rainer (SFEI) re: the P2 side of CECs.

\* Tim will follow-up with John Katz to see if R9 is still active in GC initiative.

**2. EPA will support the work of DEA and municipalities on advancing "take-back" programs for pharmaceuticals, hygiene products, etc.<sup>14</sup>**

\* Echo EPA's "4-prong strategy" on CECs<sup>15</sup>.

\* Tim follow-up with Luisa to see whether this action could be advanced through R9/WTR-3.

**Estuarine Standard**

**1. EPA will support the State Board in establishing a 12-month estuarine standard in the revised Water Quality Control Plan for the Delta.** This standard will define *suitable habitat*, and identify acceptable *reference conditions* that correspond with sustainable populations of native aquatic species<sup>16</sup>. Specifically, the standard will be designed to increase the temporal and spatial amount and variability of the salinity isohaline (X2) across the Bay/Delta so physical and biological conditions favor the reproduction and survival of native species.

\* Bruce follows-up with Wim K. on: (a) obtaining 3D model from (circa 1994) and related SAS stats package that correlates "level of development" with different precipitation years; (b) options for filling data gap for fall X2 with work from one of Wim's associates (through the ASC grant?); and (c) forecasts for how 12-month estuarine standard would be affected by different scenarios proposed by BDCP [BH sent email].

\* Bruce forecasts how EPA's proposed estuarine standard is affected by different scenarios related to BDCP's likely infrastructure proposal and water exports.

\* Bruce articulates how the likely ESA-related actions on flow for listed species contrasts with the proposed CWA-related actions on flow to establish a 12-month estuarine standard to safeguard a diversity of beneficial uses.

\* Erin and Bruce collaborate (with Mo!) on preparing some graphic art that depicts the horizontal and vertical spread of the low-salinity zone (X2) within the estuary under different flow conditions [BH contacted Michael MacWilliams].

**2. EPA will engage the State Board toward establishing a CWA §303(d) listing for flow impairments for the Bay/Delta.**

\* Erin discusses options with P.K. (WTR-2)

<sup>14</sup> [http://www.takebacknetwork.com/news\\_t.php](http://www.takebacknetwork.com/news_t.php)

<sup>15</sup> [http://www.epa.gov/ow/speeches/9-18-08\\_EPA\\_Emerging\\_Contaminants\\_Testimony.pdf](http://www.epa.gov/ow/speeches/9-18-08_EPA_Emerging_Contaminants_Testimony.pdf)  
<http://co.water.usgs.gov/publications/non-usgs/Batta09Conta.pdf>

<sup>16</sup> [http://www.swrcb.ca.gov/waterrights/water\\_issues/programs/bay\\_delta/bay\\_delta\\_plan/water\\_quality\\_control\\_planning/](http://www.swrcb.ca.gov/waterrights/water_issues/programs/bay_delta/bay_delta_plan/water_quality_control_planning/)

## Migratory Corridors

1. **EPA will encourage the State Board to list the San Joaquin River in the Delta as impaired for salmon migration (both adults and young) per CWA §303(d)<sup>17</sup>. In addition, EPA will work with the California Department of Fish and Game (CDFG), the State Water Board, and the Regional Water Boards to link this listing with the establishment of a pending TMDL for temperature on the San Joaquin River and its tributaries<sup>18</sup>.**

- \* Bruce asks DFG to model flows needed to fix temperature impairment.

- \* Bruce cross-references this action with necessary flow releases from the reservoirs to support spawning conditions for a cold water fishery.

- \* Bruce cross-references this action with existing/potential requirements by FERC that requires dam operators to protect spawning conditions for adult salmon, and with NOAA's mandated attraction flows on the Stanislaus R.

- \* Bruce cross-calculates the flows needed for this action with the flows needed for the proposed 12-month estuarine standard.

- \* Erin discusses options with P.K. (WTR-2)

2. **EPA supports the work of the State Board to establish water quality standards for the San Joaquin River that result in flows sufficient to establish *migratory corridor* for salmonids in the region the river enters the South Delta.**

- \* Bruce contacts CDFG and Les to discuss how amended SJR flow objectives could accomplish this goal.

## Wetlands

1. EPA will encourage the Sacramento Corps District to confer federal jurisdiction upon all Delta islands that have subsided below sea level (under CWA §404).
2. A will engage the Sacramento Corps District and municipalities to identify and designate

<sup>17</sup> Per Erin: A “**category 5**” listing under CWA §303(d) corresponds with the *cause* of the impairment that should be addressed by TMDLs, while a “**category 4**” listing corresponds with the *source* of the impairment that should be addressed by other means.

<sup>18</sup> With this proposed action, EPA is seeking to integrate the flows needed to establish a migratory corridor for salmonids in the Delta with temperature reductions in tributaries to the Delta.

<http://www.epa.gov/region9/water/watershed/sfbay-delta/>

appropriate mitigation sites within the secondary zone of the Delta, and to establish mitigation ratios that are consistent with the Final Compensatory Mitigation Rule (2008)<sup>19</sup>.

\* Tim follows-up with USGS (Jacob Fleck) and Superfund (Harry Allen) to ask them about feasibility for sequestering/remediating methylmercury loads/hotspots within the Yolo Bypass [Tim sent messages to JF and HA requesting appointments]<sup>20</sup>.

\* Tim evaluates options for WQ trading schemes to address Hg

\* Erin/Tim talk with the Corps about requiring monitoring for Hg at mitigation sites

3. EPA will encourage the Sacramento Corps District to require the beneficial re-use of dredged material within the Delta to promote the restoration of wetlands, and potentially to offset the subsidence of certain Delta islands where landowners are willing to accept clean dredged material<sup>21</sup>.
4. EPA will engage with DWR and the Sacramento Corps District<sup>22</sup> under the Central Valley Flood Management Program (CVFMP) to conserve and restore floodplains on the periphery of the Delta to amplify beneficial uses across the region and accommodate floodwaters<sup>23</sup>.
5. EPA will work with BDCP, mitigation banks, and other wetland restoration activities to ensure multiple beneficial uses are addressed, particularly in regard to a migratory corridor for young salmon through the delta [BH].

### **Integrated Monitoring and Assessment Program**

1. **EPA will engage with the Water Boards and the Interagency Ecological Program (IEP) to design and establish a *Program* that integrates monitoring and assessment for the Delta and its Central Valley watershed** for the following purposes:
  - a. Understanding the transport within the B-D and fate of contaminants [ xyz] introduced via Sacramento and San Joaquin river inflows under a range of tributary hydrologic and management conditions.

<sup>19</sup> [http://www.epa.gov/owow\\_keep/wetlands/wetlandsmitigation/index.html](http://www.epa.gov/owow_keep/wetlands/wetlandsmitigation/index.html)

<sup>20</sup> Marvin-DiPasquale, Alpers, and Fleck, USGS Open-File Report 2009-1182 [http://pubs.usgs.gov/of/2009/1182/http://swrcb2.swrcb.ca.gov/centralvalley/water\\_issues/tmdl/central\\_valley\\_projects/delta\\_hg/other\\_technical\\_report\\_s/ybwa\\_hg\\_final\\_rpt.pdf](http://pubs.usgs.gov/of/2009/1182/http://swrcb2.swrcb.ca.gov/centralvalley/water_issues/tmdl/central_valley_projects/delta_hg/other_technical_report_s/ybwa_hg_final_rpt.pdf)

<sup>21</sup> [Tim will ask Brian about appropriate working for this Action and for more recent reference materials]  
<http://www.spn.usace.army.mil/ltms2001/chapter7.pdf>  
[http://www.bcdc.ca.gov/dredging/ltms/ltms\\_program.shtml](http://www.bcdc.ca.gov/dredging/ltms/ltms_program.shtml)

<sup>22</sup> per Erin: The Corps took promising steps toward protecting aquatic resources within the Delta by suspending NWP's 29 and 39 that otherwise would have allowed small residential, commercial, institutional developments.  
<http://www.spn.usace.army.mil/regulatory/nwp/NWP29.pdf>  
<http://www.spn.usace.army.mil/regulatory/nwp/NWP39.pdf>

<sup>23</sup> <http://www.water.ca.gov/cvfmp/documents.cfm>

- b. Provide reports [?time frame] to the WBs regarding on key chemical, physical and biological stressors and processes to help plan and prioritize actions pursuant to the Boards' Strategic Plan for the Delta.
- c. .
- 2. **EPA will engage with the State Board and the Interagency Ecological Program (IEP) to develop a common data management system for water quality related data.** A common system should ensure that data on water quality and related beneficial use condition are collected and available in forms that promote sharing and application. The uses of information considered will relate to water quality concerns at the local as well as state and federal levels. Design of this system will be conducted under the direction of the [ ?] and will involve the regional monitoring program initiatives underway in the Delta and San Joaquin, as well as representatives of the Sacramento River Watershed Program and...

CY: Call Steve McCord...

- 3. **As part of the integrated Monitoring and Assessment Program for the Bay-Delta watershed incorporate an “accountability framework” for actions to restore and protect water quality<sup>24</sup>.**

- \* Develop stewardship indicators that can be reported by (or derived from data reported in) existing water quality protection programs, such as ILRP, MS4, and municipal NPDES permitting.

- \* Establish an a website [similar to the Chesapeake Bay Chesapeake Bay TMDL Tracking and Accounting System (BayTAS)?] to report performance, assess progress and enhance accountability and transparency.

- \* Articulate transparent goals.

- \* Collaborate with the Water Board on their “Irrigated Lands” program.

- \* Add numeric requirements to stormwater permits. [Query: Are numeric targets the answer? What induces measurable results? Consequences...?]

- \* Coordinate with SFEI to discuss: (i) routes for ensuring implementation, (ii) feedback loops, and (iii) adaptive management.

Action for Delta RMP [wetlands] Through CWA authorities (404, 401) and voluntary programs EPA will assist managed wetlands with monitoring and compliance with water quality requirements and to sustain the conservation and habitat values of these resources.

-- This action will assist conservation of habitat thru BDCP mitigation of loss of managed wetlands to tidal habitat.

-- Work with the California Water Quality Monitoring Council to sponsor a standard

<sup>24</sup> During our meeting we developed an action on “TMDL tracking & accountability” per Sam’s idea, so, for the sake of discussion I pasted-in notes from my conversation with Sam on this topic. [CY: even if there were many TMDLs to track in the B-D, their full implementation would not accomplish the water quality needed to protect beneficial uses. Some of the recommendations we’re making are, for example, flow-oriented, and not typically implemented thru TMDLs. TMDLs can be a very inefficient way to improve water quality – especially if ‘by the book with load allocations etc. – very up front info intensive. Push for a range of practices/programs with an accounting system: good ‘stewardship’ practices and policies, TMDL implementation, etc. (Could this be part of existing programs such as stormwater, ILRP,...?)

assessment protocol for managed wetlands. [Note: The CVJV and associates may be of assistance.]

**action for Delta RMP [wetlands]:** EPA will engage the State Board and the Sacramento Corps District to establish a Regional Monitoring Plan (RMP) for the Delta requiring: compliance with conditions written into permits issued by the State Board and the Corps under CWA sections 401 and 404 involving stormwater runoff; and surveys of the presence/absence of methylmercury in the vicinity of mitigation areas.

**potential action for Delta RMP [contaminants]:** EPA will continue supporting the work of the Coalition for Urban and Rural Environmental Stewardship (CURES) to develop a Regional Monitoring Plan for the San Joaquin River that characterize the sources of contaminants (including selenium), the fate and transport of these contaminants, and the performance of public and private pollution control programs.

**potential action for Delta RMP [contaminants]:** EPA will partner with federal and State agencies to link the existing monitoring effort for the Grasslands Bypass Project with emerging monitoring effort for the San Joaquin River Restoration Program<sup>25</sup>.

#### **Research, modeling, and analysis: Priority Needs**

- 1. EPA will study an array of proposed alternatives for changing the way freshwater is moved through the Delta (including the “Delta Corridors” proposal)<sup>26</sup>.**
- 2. EPA will work through the [Delta science program?] to organize a collaborative review and refinement of conceptual models (such as models developed for DRERIP ) to characterize the fate and transport of contaminants into and through the Bay/Delta. The models will consider scenarios that differ with respect to inflow and Delta channel configuration<sup>27</sup>.**

The Central Valley watershed is the source of many pollutants of concern in the Delta. Existing concentrations and loads of contaminants entering the Delta via the San Joaquin River harm the health of the Delta ecosystem as well as within the River itself. Large storm pulses are also known to be times when contaminants are flushed into the Delta. Changes in the amount and manner of Delta diversions could exacerbate this problem if there is reduced inflow from the Sacramento River and less water movement associated with the existing through delta conveyance.

Support development of flows modeling and analysis on the San Joaquin that reflects channel conditions, routing, and travel time of flows on the main River and bypasses (from Friant Dam to the Delta), and tributaries from [...] to the Delta. (CY: call Lisa Holm or Gene Lee for help. Is this needed, available for tribes? At higher flows, how much is understood, given the propensity of River to spread out?)

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<sup>25</sup> <http://www.restoresjr.net/>

<sup>26</sup> [http://deltacorridors.com/uploads/DCPresentation\\_UOPWaterForum\\_May2008.pdf](http://deltacorridors.com/uploads/DCPresentation_UOPWaterForum_May2008.pdf)

<sup>27</sup> Selenium is a relatively serious problem now in the Bay/Delta, but its adverse effects could be much more profound if an isolated facility is constructed and/or one or more catastrophic events occur.

*CY: considerations in reframing this: (1) sediment transport, deposition, re-suspension. (2) For selenium: , conditions for flushing selenium from the Bay Delta into the Pacific Ocean ; effectiveness of flushing in reducing the exposure of aquatic life to contaminant<sup>28</sup>.*

**3. EPA will assist the State Board with improving models to forecast the fate and transport of pesticides to the Bay/Delta ecosystem.**

**Bay Delta Conservation Plan (BDCP)**

❖ Need to discuss potential effect on wq, and what needs to be considered as we evaluate alternatives.

❖ **Need to discuss baseline conditions for pre-PC operations.** Are there things we want to say about how non-salinity WQ parameters are effected by operations, and how they might be considered (rather than attempting to address this in the development of future WQS)?  
*[CY query re intent of this highlighted statement. Is this environ doc baseline (without project)? Or some other context and purpose? Let's discuss – espec. if it's got anything to do with impacts as construed in envir review.]*

**Low Impact Development Strategies (LIDS) for Water Quality**

❖ Promoting LIDS, engagement with municipalities on land-use matters, and non-regulatory approaches to protecting and restoring WQ and water supply.

**Anti-Degradation Policy**

❖ WTR-5 is analyzing this statewide and may have recommended language for the Action Plan.

**Invasive Species**

1. To be discussed...stay tuned (or start writing)
- 2.

**Threads for creating compelling vision statement for EPA's Action Plan**

Ten-year Action Plan.

Reference vision statements from PPIC and Delta Vision.

Define EPA's goal for desired conditions in the Delta.

\* Delta inherently floodprone.

\* Building more residential and commercial infrastructure will further restrict our management options for water quality, fish, and wildlife while also increasing costs to taxpayers to protect the new infrastructure from flooding and for providing emergency response.

\* An isolated facility, properly sited, sized, and operated could improve habitat conditions in the Delta while increasing the security of the State's water delivery system.

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<sup>28</sup> This proposed action should be linked with the establishment of a migratory corridor for salmonids on the San Joaquin River and San Joaquin River Restoration Program (<http://www.restoresjr.net/>).

Tailor an EPA vision statement as suggested by Erin on 04/13/11:

*"For the "desired estuarine community", I used the estuarine community described in the 2006 PPIC report, envisioning futures. I'd like to see something added regarding the size and composition of the phytoplankton community, but don't feel that I know enough to adequately identify a goal for the estuarine community we are attempting to protect."*

Habitat goal for San Francisco Bay Delta estuarine community – Optimize salinity and temperature variability to support:

1. Desired estuarine species:
  - a. Native and endemic
  - b. Food and sport
  - c. Food web species that support species in a and b (e.g., diatoms, copepods, mysid shrimp).
2. Abundant zooplankton and mysid shrimp.
3. Minimize success of invasive species
4. Diverse structure and function within six necessary physical habitat types:
  - a. Productive, brackish open water habitat (low salinity zone).
  - b. Brackish tidal marsh
  - c. Seasonal floodplain
  - d. Freshwater wetlands
  - e. Upland terrestrial habitat/buffer
  - f. Open river channels

The Delta's relationship to the watershed ( ?)

Proportionate and adequate inflow for Delta objectives, on a more natural inflow hydrograph (substantial increase on SJ)

Water quality objectives met [in ways that support flow needs/ functions ]

*Discussion/notes: On the San Joaquin side the combination of severely reduced flows (low DO; temperature stress; concentration of contaminants) and contaminants is such that the status quo could impair recovery of parts of the delta (ecosystem—but also other beneficial uses, such as rec and ag.)*

*Restoration of the River corridor (eg. SJRRP, wetlands and floodplain habitat, tributary fall run salmonids, ... (CY Check with USGS, Bruce re condition of fish generally) These are issues raised to the RB (triennial review, 303 (d)*

*Thus vision for the SJ includes:*

- ✓ *Higher inflow on a pattern tracking natural hydrology*
- ✓ *Reduction in loads of Se and other contaminants (e.g., pesticides, MeHg)*  
*(CY: check background docs from RB; check flows comments, espec. #*
- ✓ *(WE could go into specific needs: appropriate temperature objectives (check Valentina's recent letter on listing); beneficial use designation and objectives that capture the smaller scale diversity and range of conditions (temporal, spatial)*

*needed for survival in the River*  
*(CY: call /ask re the occurrence of warm and cold species – how are they separated? Do they ever overlap in habitat?)*

### **Bike Rack**

**potential action for selenium** [needs clarification]: EPA will make concerted use of regulatory and non-regulatory programs to reduce loads of selenium into the Bay/Delta by x-y [range or percent annual average] to avoid the cost of additional 303d listings and the preparation of responsive TMDLs.

*\* CY: check with RB re possibility of adding something in the Davis area; SJ is pretty much covered*

**potential action for selenium** [needs clarification]: EPA will support the Central Valley Water Board's requirements for implementation of existing TMDLs for agricultural drainage in the San Joaquin River Basin. *(Review Rudy's information about expansion of the GBP; review the WDR draft)*

**potential action for selenium** [needs clarification – is this related to the action we propose that links with the Water Board's pending WDR?]: In order to further reduce downstream mobilization of selenium from the San Joaquin River, ~~EPA will seek a partnership with the Central Valley Water Board and USBR to add several "non-participating" dischargers in the vicinity of the Grasslands Bypass to the compliance program under the existing TMDLs.~~

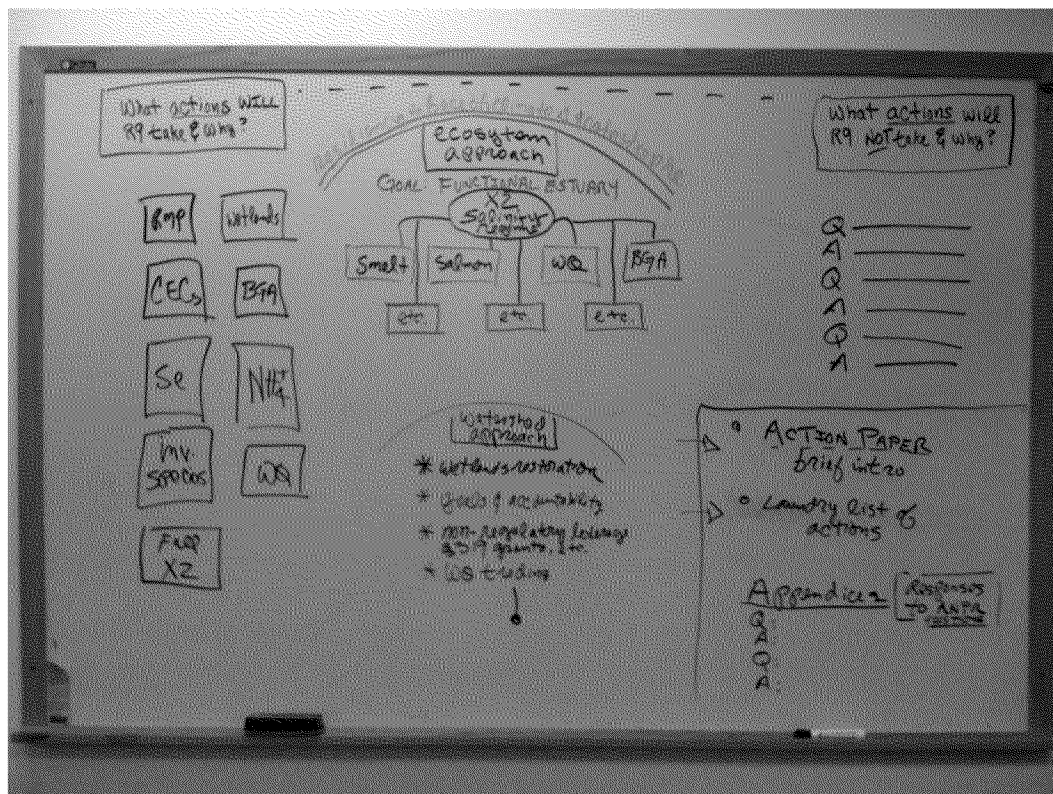
**Follow-up for pesticides topic:** Re: litigation (where is disagreement between agencies; where is OW?) ---TH to write something

### **Criteria for Proposing EPA Actions (circa JAN 2011)**

1. Importance to aquatic habitat
  - a. Biggest bang for the buck
  - b. Confidence in success
  - c. Contributes to resiliency (re: proposed BDCP infrastructure, seismic and storm catastrophe, sea level rise)
  - d. "No Regrets"
2. Feasibility (in-house resources & expertise)
3. The view of the State regarding our proposals
  - a. Chance of success
4. Clear authority for EPA to act
5. Political feasibility



## Conceptual Structure of EPA's Action Plan





Karen: Got biocriteria?

Karen: View our work as a GAPS analysis of what we can do to protect fishes in the Delta...

Group: We need to establish the context for all the actions EPA is proposing, and explain related actions and processes underway that tie into our proposed actions. Hello? Tim get's this and needs your help ;-)

Group: We need to establish the geographical and temporal scope of EPA's proposed actions.

